REMARKS

Claims 3-8, 14-16, and 19-20 are pending. Claims 1-2, 9-13, 17-18, and 21 have been cancelled herein, without prejudice or disclaimer.

Claims 3-8, 14-16, and 19-20 stand rejected.

Claims 3-4, 6-8, 14-15, and 19 are amended herein, without prejudice or disclaimer.

Claims 22-28 are newly added herein.

Reconsideration of this application is requested in view of the following remarks and accompanying amendments.

Objection to the Specification

The disclosure is objected to because the application number of a cross-referenced application was omitted. In response, paragraph [0001] is amended to include the application number of the cross-referenced application. Withdrawal of this objection to the specification is requested.

Double Patenting Rejection

Claims 1-21 stand provisionally rejected under non-statutory obviousness-type double patenting over claims 1-15 of U.S. Patent Application Serial No. 10/593,536, and over claims 1-21 of U.S. Patent Application Serial No. 11/665,302.

In response, Applicants hereby submit terminal disclaimers in accordance with 37 C.F.R. 1.321(c). Applicants request withdrawal of this rejection in view of the terminal disclaimers.

Claim Rejections – 35 U.S.C. §102(b)

Claims 1-5, 7, and 11-18 have been rejected under 35 U.S.C. § 102(b) as being anticipated by De Bonet et al. (U.S. Patent No. 6,510,177, hereinafter De Bonet). Applicants submit that for the reasons discussed below the subject claims are not anticipated by De Bonet.

Amended claim 3 is directed to a complexity scalable video decoder. In one embodiment, **the bits used for coding the video residual** formed after motion estimation/compensation are **used in both a base layer low resolution decoder and an enhancement layer full resolution decoder**. The motion vectors (MVs) transmitted in the base layer bitstream are used in both the base layer decoding and the enhancement layer decoding, but with a higher accuracy in the enhancement layer decoding than in the base layer decoding. The motion compensation prediction is done at a low resolution in the base layer decoding, and at a high resolution in the enhancement layer decoding. The motion blocks at the low resolution correspond to larger blocks at the high resolution. At the full resolution decoder, **the residual is upsampled**, and the upsampled residual is added to the motion compensated full resolution prediction to form a full resolution decoded image block**.**

The base layer decoding uses only the base layer bitstream. An additional enhancement layer bitstream may be transmitted for use in the enhancement layer decoding. The enhancement layer bitstream includes a full resolution error signal to be added to the decoding result of the base layer bitstream, which was generated with full resolution motion compensation.

When the additional enhancement layer bitstream is not sent for a picture, the base layer is reconstructed using the low resolution residual for the base layer and low resolution motion vectors, and the enhancement layer is reconstructed using the upsampled version of the residual for the base layer and high resolution motion vectors. That is, the same low resolution residual is used by both the base layer and the enhancement layer decoders, and the low resolution residual is upsampled when used by the enhancement layer decoder.

In that regard, amended claim 3 recites:

A spatial scalable video decoder, comprising:

an upsampler for upsampling a low resolution prediction residual to form an upsampled prediction residual;

a motion compensator for forming a motion compensated full resolution prediction;

an adder, in signal communication with said upsampler and said motion compensator, for adding the upsampled prediction residual to the motion compensated full resolution prediction to form a full resolution decoded image block;

a second motion compensator for forming a motion compensated low resolution prediction; and

a second adder, in signal communication with said second motion compensator, for adding the low resolution prediction residual to the motion compensated low resolution prediction to form a low resolution decoded image block. (Emphasis added.)

Amendments to claim 3 find support, for example, in FIGs. 9-10 and FIGs. 14-16 and their associated descriptions. Claims 6-7 and 14 are amended to include limitations similar to those recited in claim 3. Claim 4, 8, 15, and 19 are amended for consistency with their respective base claims. Thus, amendments to these claims are also fully supported by the specification and drawings. No new matter is believed to be added by these amendments.

Applicants submit that De Bonet fails to teach or suggest each and every limitation of amended claim 3.

De Bonet relates to a system and method for encoding, transmitting, decoding, and storing a high resolution video sequence using a low resolution base layer and a higher resolution enhancement layer. According to De Bonet, the high resolution enhancement layer is decoded using an enhancement layer decoder that uses the decoded base layer images, the enhancement layer encoded data and additional data from the encoded base layer data (column 3, lines 33-37).

According to FIGs. 11A and 11B in De Bonet, to decode I-frames at the enhancement layer decoder, the decoder extracts decompressed pictures included in the base layer decoder. The decompressed pictures are then upsampled to provide a prediction of the high resolution pictures. Residual pictures contained in the enhancement layer are received and decompressed by the enhancement layer decoder. The predicted pictures (i.e., the upsampled base layer pictures) and the residual pictures then are added to create high resolution pictures.

When P-frames or B-frames are decoded according to De Bonet, the decompressed motion vectors from the base layer are upsampled and used to generate predicted P-frames or B-frames. The predicted P-frames and the residual P-frames then are added to create high resolution P-frames. Similarly, the predicted B-frames and the residual B-frames then are added to create high resolution B-frames. The residual P- and B-frames correct the prediction of P-frames and B-frames respectively based on motion information from the base layer.

In view of the above, it is clear that one skilled in the art would readily understand that the residual P- and B-frames in De Bonet are at a high resolution corresponding to the enhancement layer, and these **residual frames are not used by the base layer**. No upsampling is needed for these residual P- and B-frames used by the enhancement layer decoder since they are already at a high resolution. In the enhancement layer decoder described in FIGs. 11A and 11B in De Bonet, decompressed base layer I-frames are upsampled (1106), and motion vectors are upsampled (1127, 1154) for P- and B-frames. However, **the residual frames are not upsampled**. Thus, De Bonet fails to teach or suggest each and every limitation recited in amended claim 3.

Thus, Applicants respectfully request withdrawal of the rejection of claim 3. Amended claims 7 and 14 include limitations similar to those of claim 3 and are believed to be not anticipated by De Bonet for at least the same reasons as those applied with respect to claim 3. Claims 4 and 15 are amended for consistency with claims 3 and 14, respectively. Therefore, claims 4-5 are not anticipated by De Bonet at least by virtue of their ultimate dependency from claim 3, and claims 15-16 are not anticipated by De Bonet at least by virtue of their ultimate dependency from claim 14. Claims 1-2, 11-13, and 17-18 have been cancelled.

Claim 6 stands rejected under 35 U.S.C. § 102(b) as being anticipated by Nakagawa et al. (U.S. Patent No. 6,104,434, hereinafter Nakagawa). Applicants submit that for at least the reasons discussed below claim 6 is not anticipated by Nakagawa.

Amended claim 6 recites:

A spatial scalable video decoder for decoding a video bitstream of an image block, comprising:

a receiver for receiving a low resolution prediction residual from the video bitstream;

a processor for forming a low resolution decoded image block in responsive to the low resolution prediction residual;

an upsampler (1015), for upsampling the low resolution prediction residual to form an upsampled prediction residual; and

a second processor for forming a full resolution decoded image block in responsive to the upsampled prediction residual.

Nakagawa teaches a video coding apparatus and decoding apparatus, wherein if a downsampling unit subsamples the original prediction error signal (residual) to reduce its picture resolution, an upsampling unit will be used to restore the original resolution of the residual.

Nakagawa fails to teach or suggest the use of the low resolution prediction residual for both the base layer and enhancement layer decoding in a scalable video decoder. Nowhere does Nakagawa disclose or suggest the features of "forming a low resolution decoded image block in responsive to the low resolution prediction residual" and "forming a full resolution decoded image block in responsive to the upsampled prediction residual" as recited in amended claim 6.

As Nakagawa fails to teach or suggest each and every limitation recited in amended claim 6, Applicants submit that claim 6 is not anticipated by Nakagawa.

Claim Rejections – 35 U.S.C. §103(a)

Claims 8-9 and 19-20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over De Bonet in view of Nakagawa.

Claim 19 has been amended to depend from claim 14. This amendment finds support, for example, in paragraph [0073] on page 7 of the specification. Claims 8 and 19 are also amended for consistency with claims 7 and 14, respectively.

Claim 8 depends from claim 7 and, thus, includes all limitations of amended claim 7. Claims 19-20 directly or indirectly depend from claim 14 and, thus, include all limitations of amended claim 14. The teachings of Nakagawa have been discussed hereinabove. Even assuming arguendo that Nakagawa teaches the additional feature as alleged, Applicants submit that the alleged additional teachings of Nakagawa fail to overcome the defect of De Bonet as applied to the base claims. Accordingly, claims 8 and 19-20 are patentably distinguishable over the cited references for at least the reasons set forth above with respect to independent claims 7 and 14. Thus, Applicants respectfully request withdrawal of the 35 U.S.C. §103(a) rejection of claims 8 and 19-20. Claim 9 has been cancelled.

The 103(a) rejection of claim 10 is moot in view of its cancellation.

New Claims

New claims 22-28 have been added. Support for these claims may be found, for example, in FIGs. 9 and 10 of the specification and their associated descriptions.

New claim 22 includes limitations similar to those recited in amended claim 6 and should be likewise allowable. New claim 23 depends from claim 3, new claim 24 depends from claim 6, new claims 25-26 depend from claim 7, new claim 27 depends from claim 14, and new claim 28 depends from new claim 22. Therefore, claims 23-28 should be allowable at least by virtue of their ultimate dependency from claims 3, 6-7, 14, and 22.

Conclusion

Applicants believe they have addressed all outstanding grounds raised by the Examiner and respectfully submit that the present case is in condition for allowance, early notification of which is earnestly solicited.

Should there be any questions or outstanding matters, the Examiner is cordially invited and requested to contact Applicants' undersigned attorney at his number listed below.

Respectfully submitted,

/Paul P. Kiel/

By: Paul P. Kiel
Registration No.: 40,677
Phone: 609-734-6815

Thomson Licensing LLC
Patent Operations
P.O. Box 5312
Princeton, NJ 08543-5312

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